

mediate stages; systematic and argumentative in the later stages. The descriptive stage includes story-telling, the awakening of the child's imagination and interest, and the introduction of simple map and out-of-door work. In the transition stage, the pupil is chiefly concerned with the investigation of *geographical principles* rather than with the acquisition of geographical facts. In the final stage, the pupil has to collect his own data, to construct his own maps and diagrams, and to reason out his own conclusions, that is, he has to learn the methods and principles of *geographical argument*. Most teachers will agree with these divisions, and be prepared to follow Mr. Wallis in his treatment of the first and second stages; the ideas and methods of the third stage are more debatable, but, from the author's point of view, they are well stated and reasoned.

It is difficult, in a short space, to mention even a fraction of the valuable things the book contains. There are practical exercises for in and out of doors; plans and suggestions for the ideal geography-room and for apparatus; arguments on the relation between geography and history and other subjects, with sensible ideas on correlation; and there are even a few lessons for examiners on how to set examination questions.

Everywhere full details are given in a style attractive, lucid, and often of considerable literary merit. In many places there is geographical information of great value, information such as a teacher cannot always find in the text-books at his disposal.

Full approval may be given to the recommendations to teachers of geography to avoid straying into attractive historical or geological byways, interesting as they may be, for they are not geography, and there is plenty of work to be done without going out of the proper field. It is wise, also, to insist that the geography teacher is not to wait for the science master to explain the working of a barometer before the results of reading the barometer are utilised, nor to waste his own precious time in explaining what falls within the province of another. Sometimes the academic treatment of a subject has to give way to a common-sense one, but it is not every author who writes a book who is willing to state this truth.

We commend the book to all teachers of geography, because it is so eminently sensible, practical, and stimulating. They need not adopt all the conclusions of Mr. Wallis, but they will find it difficult to disprove their truth, or to resist their attractiveness.

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MUSICAL FORM AND DEVELOPMENT.

The Musical Faculty: Its Origins and Processes.

By W. Wallace. Pp. vi+228. (London: Macmillan and Co., Ltd., 1914.) Price 5s. net.

THE systematic and scientific study of the psychological processes involved in the creation and production of music is, from the nature of the case, exceedingly difficult, and the author is fully justified in claiming that there is room for further literature on the subject. How far he has been successful in dealing with these problems in the present book is open to some doubt.

Speaking generally, the first four chapters deal mainly with the development of music pure and simple, the remainder with musicians and their characteristics. Now in treating of individuals, there is no lack of statistical and historical evidence on which to base conclusions. Whether the subject-matter be the existence of musical prodigies, the part played by heredity, the influence on health, both mental and physical, of great musical genius, or such functional characters as mental audition, tonal memory, sense of tempo, power of detecting differences of tone quality, inhibition of sound perception, the data from which inferences may be drawn are of a fairly definite character, and, on the whole, Mr. Wallace's treatment may be regarded as satisfactory. But the present reviewer totally disagrees with what he says about music itself in the chapters entitled "A Readjustment of Values," "Historical Bearings," and "Individual Development."

Mr. Wallace may prefer modern French cacophonies to Haydn's and Mozart's delightful quartets and symphonies, but he surely cannot seriously wish us to believe that those early composers were lacking in originality or individuality simply because they could obtain what they wanted with the use of simple chords and melodies. Neither can we agree with the statement that "Music, as we understand it, has not yet established her eternal verities," and when he states that "it would be no feat for a composer to write another *Orfeo* to-day," we can only say we should like to see anyone try to do it!

Admittedly, both the character of musical form and the recognised standard of excellence are changing, and the changes are the result of a process of evolution similar to that which exists everywhere else. But evolution does not always represent a change to a higher standard of perfection. It sometimes stands for degeneration, and "a readjustment of values" may spell barbarism, as is evidenced in the use of poisonous

gases in war and the massacre of women and children. We would rather suggest that musical art possesses an element of *permanence* which is not to be found in the other arts. The collection of masterpieces which the present generation has inherited from the classical composers is so large that a modern composer, working on the same lines, would find it next to impossible to assert his influence. Consequently, musicians have had to seek fresh fields and pastures new by tearing up the "scraps of paper" which their predecessors regarded as binding.

JUR BOOKSHELF.

Surface Tension and Surface Energy and Their Influence on Chemical Phenomena. By Dr. R. S. Willows and E. Hatschek. Pp. viii+80. (London: J. and A. Churchill, 1915.) Price 2s. 6d. net.

THE appearance of this book, following close on that of a similar work by Michaelis, is a welcome sign of the increasing interest now taken in this subject. The distribution of matter and energy at any interface, although of the first importance, has only come into prominence since the development of colloid chemistry.

The scope and character of the book may be indicated by a reference to the chief subjects discussed. They are:—the fundamental ideas of surface tension; intrinsic pressure; Gibbs's surface excess formula; recent experimental work on interfacial concentrations; electrical phenomena at interfaces, with special attention to the Lippmann electrometer and the dropping electrode; and, in conclusion, such matters as condensation on gas ions, effect of electrification on the vapour pressure of drops, and "waterfall electricity."

It is scarcely surprising that the authors have found it no easy task to co-ordinate these varied subjects; and to this difficulty is doubtless due a want of clearness in a few places. There is one notable omission; one would have expected to find the development of the surface excess equation, either as given by Gibbs himself, or by Thomson or Milner. Curiously, no mention is made of Milner's experimental work, the first attempt to test the formula.

In spite of these defects, the work must prove helpful to advanced students and research workers, biological and technical, who have a practical interest in adsorption and allied phenomena. There is a useful index, but it seems a pity that no references to original papers are given.

W. W. T.

Fire Tests with Glass. "Red Books," Nos. 196 and 197. (London: British Fire Prevention Committee.) Price 2s. 6d. each.

THESE two small books embody the British Fire Prevention Committee's Report on Fire Tests made respectively with skylight openings and windows filled in with "wired glass" manu-

factured in our own country. The skylights were five in number, each 2 ft. square, and arranged horizontally in a single straight row. The glazing was subjected to fire for an hour, followed by water from a steam fire-engine applied at close range for two minutes on the fire side. No fire passed through the glazing, but more or less water found its way through three of the five. Details of the tests are given, with illustrations showing the effects of the fire. The three vertical windows were subjected to a precisely similar test with much the same results. In the case of two of the windows neither fire nor water passed through the glazing, but in the third, though no fire passed through, the application of water caused perforation and some water got through. The temperatures reached before the application of water were not less than 1500° F. (or 815.5° C.). The maximum size of the vertical glazing tested was four feet by one foot.

The results of the tests clearly indicate that British wired glazing, when suitably fixed, can effectually check the spread of fire in a manner comparable with fire-resisting partitions and doors of much greater thickness and weight. The subject is well worth the serious attention of those interested in the limitation of damage by fire, especially in cases where the admission of light is desirable.

J. A. A.

LETTERS TO THE EDITOR.

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of NATURE. No notice is taken of anonymous communications.]

The Okapi.

IN my letter published in NATURE of May 27 (vol. xcv., p. 342) dealing mainly with the "Supposed Horn-Sheaths of an Okapi," I stated that "it is only when extremely young that the backward slope of the back is very noticeable." It is perhaps the only statement I have made regarding the okapi which was not based on my own observations, and it appears to be erroneous. The impression was derived from a photograph reproduced in M. Fraipont's "Monograph on the Okapi," of a very young one captured by natives and brought into one of the Uele stations. I have since seen a photograph of the same animal from another source which shows that there was very little backward slope. At maturity the height of the okapi at the shoulders is only 2 to 3 in. at the most more than that above the hindquarters. The following measurements taken from three animals lying as they fell, one by Mr. A. E. H. Reid, and two by myself, bring this out quite clearly:—

	Young male (No. 507)	Old female (No. 686)	Old male (Reid's) (No. 717)
	ft. in.	ft. in.	ft. in.
Nose to tip of tail (without hair) ...	6 1½	8 2	7 11
Tail (without hair) ...	0 14	0 14	0 14
Height at shoulder ...	4 4½	5 1½	4 11½
Height above hind quarters ...	4 2	4 11½	4 9
Excess of height at the shoulders...	0 2½	0 2	0 2½